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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,600	09/16/2003	Rodney M. Hornsby	038190/255096	3271

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EXAMINER

STONE, JENNIFER A

ART UNIT PAPER NUMBER

2636

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/663,600	Applicant(s) HORNSBY ET AL.	
	Examiner Jennifer A. Stone	Art Unit 2636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/16/03, 5/21/04</u> . | 6) <input type="checkbox"/> Other: ____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Lau et al. (US 5,565,783).

For claim 1, Lau discloses a system of remotely detecting and locating damaged conductors (col 2, lns 48-54), said system comprising: at least one slave controller disposed proximate at least one load and electrically connected to the at least one load via at least one conductor (Figs. 1, 4A, item 11; col 5, lns 23-25; col 6, lns 37-46), wherein the at least one slave controller comprises: at least one solid-state switch capable of controllably altering the input current to the at least one load (Fig. 4A, items 16, 24; col 7, lns 63-67); and at least one measuring element for measuring at least one parameter associated with the at least one load and the at least one solid-state switch (Fig. 4A, items 12, 14; col 6, lns 38-43), wherein said solid-state switch controllably alters the input current to the at least one load according to the at least one parameter (col 8, lns 18-30); and at least one damaged wire detector electrically connected to the at least one conductor between the at least one slave controller and the at least one load, wherein the at least one damaged wire detector is capable of at least one of detecting and locating at least one damaged conductor (col 5, lns 19-31).

For claim 2, Lau discloses each damaged wire detector (Fig. 3, item 1) is capable of notifying a respective slave controller (Fig. 4A, item 11) when the damaged wire detector detects a damaged conductor such that the at least one solid-state switch of the respective slave controller can alter the input current to the at least one load (Fig. 4A, items 16, 24; col 8, lns 52-63).

For claim 3, Lau discloses a solid-state switch that operates in at least one mode selected from a group consisting of an on mode wherein the at least one solid-state switch permits a respective load to receive the input current, and an off mode wherein the at least one solid-state switch prevents the respective load from receiving the input current, and wherein when the at least one solid-state switch operates in the off mode the at least one damaged wire detector is capable of testing the at least one conductor to thereby at least one of the detect and locate at least one damaged conductor before the at least one solid-state switch is placed in the on mode (col 9, lns 1-9).

3. Claims 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Lau et al. (US 5,565,783).

For claim 9, Lau discloses a method of remotely detecting and locating damaged conductors comprising: configuring a processing element that controls input current through at least one switch to at least one load via at least one conductor (Fig. 1, item 11 col 6, lns 37-47; col 9, lns 1,2, 12-16), wherein the configuring is based upon at least one characteristic selected from a group consisting of a current rating of each load, a voltage rating of each load, a maximum current rating of each switch and a temperature rating of each switch (col 8, lns 51-63); operating each switch in an off mode wherein

each switch prevents the input current from flowing to a respective load (col 9 Ins 2-6); testing the at least one conductor to thereby at least one of detect and locate at least one damaged conductor (col 9, In 7); operating each switch in an on mode wherein each switch permits the input current from flowing to a repective load when no damaged conductors are detected (col 9, Ins 9-12), and thereafter controlling the input current to the at least one load (col 9, Ins 13-16), wherein controlling the input current comprises: monitoring at least one parameter associated with each switch and respective load selected from a group consisting of the input current to the load, a voltage drop across the load, the input current through the switch and a temperature of the switch (col 9, Ins 25-28); determining a condition of each switch and respective load depending upon at least one of the at least one characteristic and the at least one parameter (col 9, Ins 9-12, 19-23); and operating each switch in at least one mode selected from the group consisting of the on mode and the off mode depending upon the condition of the respective loads (col 9-12).

4. Claims 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Lau et al. (US 5,565,783).

For claim 15, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 1 as stated above.

For claim 16, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 2 as stated above. In addition, the slave controller can alter the input current to the at least one load via the solid-state switch (Fig. 4A, items 16, 24; col 8, Ins 52-63).

For claim 17, Lau discloses a slave controller (the protective devices are included in the slave controller – Fig. 4A, items 16, 24) that operates in at least one mode selected from a group consisting of an on mode wherein the at least one slave controller permits a respective load to receive the input current, and an off mode wherein the at least one slave controller prevents the respective load from receiving the input current, and wherein when the at least one slave controller operates in the off mode the at least one damaged wire detector is capable of testing the at least one conductor to thereby at least one of detect and locate at least one damaged conductor before the at least one slave controller is placed in the on mode (col 9, lns 1-9).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lau and further in view of Soraghan et al. (US 6,385,561).

For claim 4, Lau does not disclose using test pulses to detect and locate damaged conductors; however, Soraghan discloses remotely detecting and locating at least one damaged conductor (col 1, lns 6-10; col 2, lns 35-39) by transmitting at least one test pulse along at least one respective conductor and receiving at least one

reflection from the at least one respective conductor; and comparing the at least one reflection to reference data (col 1, lns 54-58, 62-67; col 2, lns 1-17). It would have been obvious to one of ordinary skill in the art, at the time the invention was made to apply pulse reflections to each damaged wire detector to remotely determine/distinguish between faultless nodes, and faults or damaged cables in a power network that is difficult to access (i.e. underground).

For claim 5, Lau discloses damaged wire detectors (Fig. 3, items 1), but the detectors do not include processing reflection signals. Soraghan, on the other hand, discloses a damaged wire detector (Fig. 2a) capable of converting the at least one reflection to digital data representative of the at least one reflection (Fig. 2a, item 16), and wherein each damaged wire detector is capable of comparing the at least one reflection to reference data by comparing the digital data to the reference data (col 3, lns 34-51; Fig. 2a, item 32). It would have been obvious to convert reflections to digital data signals from each damaged wire detector to remotely determine/distinguish between faultless nodes, and faults or damaged cables in a power network that is difficult to access (i.e. underground).

For claim 6, Lau does not disclose reflection signals; however, Soraghan discloses converting at least one reflection to digital data (Fig. 2a, item 16) with at least one resolution (Fig. 4; col 25-30; Fig. 5a,b; col 4, lns 43-54). It would have been obvious to include digital data with resolution for each damaged wire detector so that an accurate difference signal is produced.

For claim 7, Lau does not disclose using test pulses to detect and locate damaged conductors; however, Soraghan discloses determining at least one length of the at least one conductor based upon at least one transit time between transmission of the at least one test pulse and reception of the respective at least one reflection (col 1, lns 64-66; col 2, lns 1-5 and 13-17), and wherein the damaged wire detector is capable of comparing the at least one reflection to reference data by comparing the at least one determined length to at least one reference length (col 5, lns 33-48). It would have been obvious to include each damaged wire detector measuring reflections by comparing a determined length to a reference length so that each individual conductor is analyzed for fault conditions.

For claim 8, Soraghan discloses comparing at least one determined length to the at least one reference length includes detecting at least one damaged conductor when the at least one determined length is shorter than the respective at least one reference length by at least a threshold length, and wherein each damaged wire detector is capable of locating the damage as a point on the respective at least one conductor at the at least one determined length (col 5, lns 32-47). It would have been obvious to include each damaged wire detector measuring reflections by comparing a determined length to a reference length so that each individual conductor is analyzed for fault conditions.

7. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lau and further in view of Soraghan et al. (US 6,385,561).

For claim 10, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 4 as stated above.

For claim 11, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 5 as stated above.

For claim 12, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 6 as stated above.

For claim 13, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 7 as stated above.

For claim 14, Soraghan discloses comparing at least one determined length to the at least one reference length includes detecting at least one damaged conductor when the at least one determined length is shorter than the respective at least one reference length by more than a threshold length, and wherein locating the at least one damaged conductor comprises locating a point on the respective at least one conductor at the at least one determined length (col 5, lns 32-47). It would have been obvious to include each damaged wire detector measuring reflections by comparing a determined length to a reference length so that each individual conductor is analyzed for fault conditions (col 5, lns 15-19; Fig. 4, *).

8. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lau and further in view of Soraghan et al. (US 6,385,561).

For claim 18, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 10 as stated above.

For claim 19, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 5 as stated above.

For claim 20, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 6 as stated above.

For claim 21, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 7 as stated above.

For claim 22, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 8 as stated above.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Andersen (US 6,434,715) discloses a slave controller and a solid-state switch that detects fault conditions.

Feight et al. (US 6,822,576) discloses a slave controller that detects fault conditions for each conductor.

Sonnemann (US 3,327,170) discloses detecting damaged conductors via current transformers.

Eslambolchi et al. (US 5,973,604) discloses detecting damaged fiber via a solid-state switch.

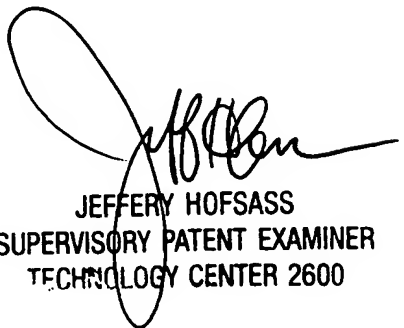
Guzman (US 4,884,034) discloses detecting damaged conductors via a solid-state switch.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Stone whose telephone number is (571) 272.2976. The examiner can normally be reached on M-F from 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Hofsass, can be reached at (571) 272.2981. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Stone
June 15, 2005



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